A.D. 1864, 31st *May.* N° 1346.

SPECIFICATION

OF

GEORGE DAVIES.

ARTIFICIAL TEETH.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1864.

A.D. 1864, 31st *May*. N° 1346.

Artificial Teeth.

LETTERS PATENT to George Davies, of No. 1, Serle Street, Lincoln's Inn, in the County of Middlesex, and No. 28, St. Enoch Square, in the City of Glasgow, Civil Engineer and Patent Agent, for the Invention of "IMPROVEMENTS IN ARTIFICIAL TEETH AND IN MOULDS FOR FORMING THE SAME."—A communication from abroad by John Terrel and Joseph Stulb, both of Philadelphia, Pennsylvania, in the United States of America.

Sealed the 22nd November 1864, and dated the 31st May 1864.

PROVISIONAL SPECIFICATION left by the said George Davies at the Office of the Commissioners of Patents, with his Petition, on the 31st May 1864.

I, GEORGE DAVIES, of No. 1, Serle Street, Lincoln's Inn, in the County of Middlesex, and No. 28, St. Enoch Square, in the City of Glasgow, Civil Engineer and Patent Agent, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN ARTIFICIAL TEETH AND IN MOULDS FOR FORMING THE SAME," (a communication to me from abroad by John Terrel and Joseph Stulb, both of Philadelphia, Pennsylvania, in the United States of America,) to be as follows:—

The first part of this Invention consists in certain openings formed in artificial teeth, and in projections at the side of the latter, so that they can be

firmly secured to each other and to the vulcanizable gum which forms the base or support for the teeth. Blocks as well as single teeth heretofore made to be used with vulcanizable gum bases have been provided with pins and projections, or have had dovetailed openings in the same, in order that the vulcanizable gum which surrounds the pins or penetrates the openings may thus acquire such a hold upon the teeth as will prevent the latter from being detached. The use of pins for this purpose is objectionable both on account of the expense of the platina of which the pins are made and the inadequate surface which they present to the gum. The dovetailed openings are also objectionable on account of the risk incurred of breaking the teeth in cutting the openings. Sets of teeth mounted on vulcanizable gum bases have been much objected to on account of the exposure of the gum at the point where two blocks are joined together, this exposure causing the work to present an unsightly and unnatural appearance in the mouth.

In carrying out this part of the Invention, each block of teeth is formed with a longitudinal opening extending through the block from one end to the other, and in the base of the block are two oblong depressions or openings communicating with the longitudinal opening above named, so that upon the introduction of the vulcanizable gum through the said depressions or openings into the longitudinal openings in the blocks (which are placed in juxtaposition), the gum on hardening will secure the blocks firmly to each other and to the base. Single teeth may also be formed in a similar manner. It will also be seen that the projections on the ends of the blocks or teeth may be so fitted to each other that the gum can pass through the longitudinal opening in one block or tooth to that in the other without being in the least exposed, the natural appearance of the teeth being thus maintained.

The second part of the Invention consists in making moulds for forming artificial teeth substantially as described hereafter, so that depressions and openings may be formed in the bases of the teeth, and so that the teeth may be removed from the mould after the depressions and openings have been made.

In carrying out the second part of the Invention, the moulds are constructed with fixed projections for forming the depressions or openings in the base of the blocks, and moveable strips having suitable recesses for forming the crowns of the teeth, which strips are kept in their relative places by means of a key. The longitudinal openings are formed by means of a pin, which is passed through the mould, in contact with the fixed projections above named. When the teeth have been moulded and baked, the pins are withdrawn, and the key is also removed; the moveable strips can then be drawn backward,

and the teeth can be taken from the mould, when they will be found to have the longitudinal openings from one end to the other, and also the depressions or openings in the base communicating therewith as above described.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said George Davies in the Great Seal Patent Office on the 25th November 1864.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, GEORGE DAVIES, of No. 1, Serle Street, Lincoln's Inn, in the County of Middlesex, and No. 28, St. Enoch Square, in the City of Glasgow, Civil Engineer and Patent Agent, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirty-first day of May, in the year of our Lord One thousand eight hundred and sixty-four, in the twenty-seventh year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said George Davies, Her special license that I, the said George Davies, my executors, administrators, and assigns, or such others as I, the said George Davies, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN ARTIFICIAL TEETH, AND IN MOULDS FOR FORMING THE SAME," (a communication to me from abroad by John Terrel and Joseph Stulb, both of Philadelphia, Pennsylvania, in the United States of America,) upon the condition (amongst others) that I, the said George Davies, my executors or administrators, by an instrument in writing under my hand and seal, or under the hand and seal of one of them, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said George Davies, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement in writing and on reference being had to the accompanying Sheet of Drawings, that is to say :—

The first part of this Invention consists in certain openings formed in

artificial teeth, and in projections at the side of the latter, so that they can be firmly secured to each other and to the vulcanizable gum which forms the base of support for the teeth.

The second part of the Invention consists in making moulds for forming artificial teeth substantially as described hereafter, so that depressions and openings may be formed in the bases of the teeth, and so that the teeth may be removed from the moulds after the depressions and openings have been made. Blocks as well as single teeth heretofore made to be used with vulcanizable gum bases have been provided with pins and projections, or have had dovetailed openings in the same, in order that the vulcanizable gum which surrounds the pins or penetrates the openings may thus acquire such a hold upon the teeth as will prevent the latter from being detached. The use of pins for this purpose is objectionable both on account of the expense of the platina of which the pins are made and the inadequate surface which they present to the gum. The dovetailed openings are also objectionable on account of the risk incurred of breaking the teeth in cutting the openings. Sets of teeth mounted on vulcanizable gum bases have been much objected to on account of the exposure of the gum at the point where two blocks are joined together, this exposure causing the work to present an unsightly and unnatural appearance in the mouth.

Such being the nature and object of the said Invention for "Improvements in Artificial Teeth and in Moulds for forming the same," I will now proceed to describe more in detail the manner in which the same is to be or may be performed or carried into practical effect; and in order that the same may be distinctly understood, I have annexed hereunto a Sheet of Drawings illustrative thereof, and have marked the same with figures and letters of reference corresponding with those in the following explanation thereof, that is to say:—

In the accompanying Drawing, Figure 1 represents a block of three teeth constructed according to these improvements; Figure 2, an inverted plan view of Figure 1; Figure 3, a section on the line 1—2, (Figure 1); Figure 4, a vertical section on the line 3—4, (Figure 2); and Figure 5, a perspective view.

A, A, A, represent three teeth, which together form what is technically termed a "block," at each end of which is a projection *a*, for a purpose described hereafter. Through the block from one end to the other extends an opening *e*, and in the base are two oblong depressions *i*, *i*, which communicate with the opening *e*. It will be seen that blocks of teeth and single teeth with depressions and openings of the character above represented and

described may be so placed that the opening *e* in one block or tooth shall coincide with that in the block or tooth next to it, so that the introduction of the vulcanizable gum which forms the base through the depression *i*, into the opening *e*, will, when the gum hardens, secure the blocks firmly to each other and to the base. It will also be seen that the projections *a* on the ends of the blocks may be so fitted to each other that the gum can pass through the opening *e* in one block to that in the other without being in the least exposed, the natural appearance of the teeth being thus maintained.

The second part of the Invention, which relates to moulds for forming artificial teeth, is illustrated in Figures 6, 7, 8, 9, and 10; Figure 6 being a plan view, with the top removed of the improved mould for forming artificial teeth; Figure 7, a transverse section on the line 1—2, (Figure 6); Figure 8, a longitudinal section on the line 3—4, (Figure 6); Figures 9 and 10, sectional views drawn to an enlarged scale of the teeth made by the moulds. A is the bottom plate of the mould, the centre of which throughout its length between the lines *x*, *x*, and x^1, x^1, (Figure 6), is a plain surface. That portion of the mould between the lines *x*, and each side of the same is raised above the level of the central part in the form of a succession of arched projections *b*, b^1, b^{11}, (Figure 8), the central portion of each projection being cut away in order to admit a block C, on the inner face of which are one or more projections *a*, these blocks C being permanently secured in their places by pins *e*, (Figure 7). D and D^1 are strips of metal, in which are cut at points opposite the blocks C, depressions *i*, *i*, corresponding to the form which it is desired to give to the blocks and crowns of the teeth, the said strips being separated from each other by a key E, which serves to keep them pressed tightly against the inner sides of the raised portion of the mould. The cap of the mould (shown in dotted lines, Figure 7,) resembles those generally used in moulds for casting teeth; G and G^1 are pins which can be introduced into the moulds through suitable openings in the ends of the same, the said pins when in the moulds occupying such a position that they project across the faces of the blocks C, and just touch the ends of the projections *a*, any portion of the mould which would interfere with the introduction of the pin being cut away. When teeth are to be formed in the moulds, the pins G are secured in the position shown in Figure 6, and the plastic material of which the teeth are to be made is introduced, care being taken that the material penetrates all the interstices below and around the projections *a*. The cap of the mould is then secured in its place, and the mould heated until the material therein is sufficiently baked. The pins G are then withdrawn, the cap is detached, and the key E removed, which permits one of the strips D to be moved back

until it strikes the side of the other. The baked material (now in the form of blocks of teeth) may be then removed by sliding each block forward, so as to release the rear of the same from the projections *a*, and then lifting it from the mould. When all the blocks on one side have been removed, the other strip D may be moved back, and the operation repeated on the other side. It will be found that the blocks of teeth cast in this manner have oblong or other shaped depressions in their bases, corresponding to the shape of the projections *a*, and that these depressions communicate with an opening (made by the pins G) which passes longitudinally through the block. This will be best understood by referring to the enlarged views of the teeth in Figures 9 and 10, Figure 9 being a transverse section of the block of teeth, and Figure 10 a longitudinal section on the line 5—6, (Figure 9), the dotted lines showing the direction taken by the pins G through the block of teeth, the depressions in which are made between the points *m*, *m*, and *n*, *n*, by the projections *a*. It will be apparent that the moulds may be constructed so as to make depressions of any shape and size in the bases of blocks of teeth for securing the same to vulcanizable gum bases and to each other. It should be understood that when the mould is in a finished state the blocks C are permanently secured in their places, the only object in making them separate from the mould in the first instance being that the projections *a* may be more readily formed. Depressions have been heretofore made in the bases of teeth by forming projections in the mould, but these projections have been formed on blocks arranged to slide outwards, so that the teeth might be removed, whereas in the mould above described the projections for forming the depressions in the teeth are stationary, the removal of the teeth being effected after the withdrawal of the key E, and the moving of the strips D and D^1 in the manner described above.

Having now particularly described the nature and object of the said Invention for "Improvements in Artificial Teeth and in Moulds for forming the same," together with the manner in which the same is to be or may be performed or carried into practical effect, I would remark in conclusion, that I claim (as the Invention communicated to me by John Terrel and Joseph Stulb),—

Firstly, the depressions *i*, *i*, and opening *e*, formed within a tooth or block of teeth, so that the latter may be secured to the vulcanizable gum bases as described.

Secondly, the projections *a*, arranged at the sides of the teeth to prevent the exposure of the vulcanizable gum at the joints between the teeth as set forth.

Thirdly, so constructing the moulds, that by means of the stationary projections *a*, the moveable strips D, and key E, depressions may be made

in the bases of the teeth, and the latter be removed from the mould as specified.

Fourthly, the use of moveable pins G for forming openings in the teeth as described.

In witness whereof, I, the said George Davies, have hereunto set my hand and seal, this Twenty-fifth day of November, in the year of our Lord One thousand eight hundred and sixty-four.

GEORGE DAVIES. (L.S.)

LONDON:
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Printers to the Queen's most Excellent Majesty. 1864.

A.D. 1864. May 31. No 1346.
DAVIES' Specification.

(1 SHEET)

FIG. 6.

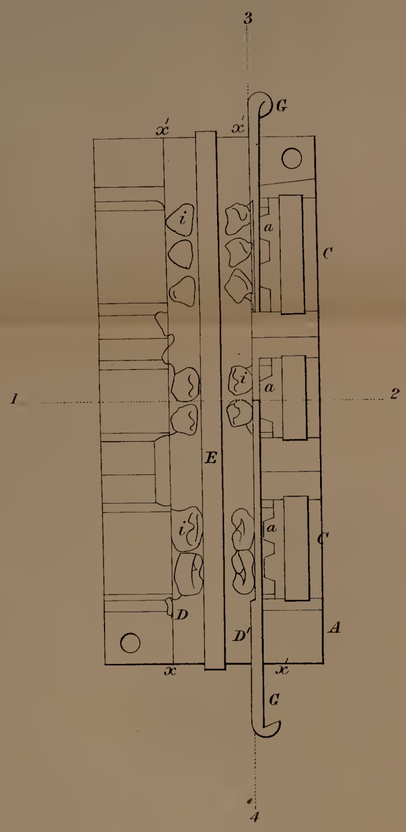


FIG. 1.

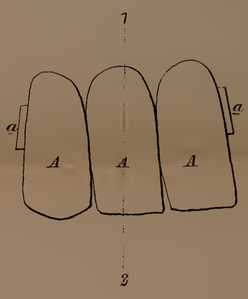


FIG. 2.

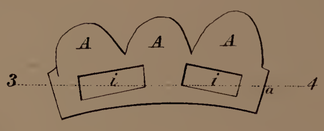


FIG. 3.

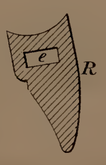


FIG. 7.

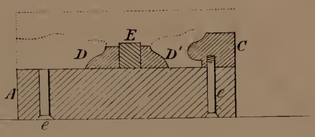


FIG. 4.

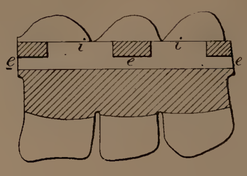


FIG. 8.

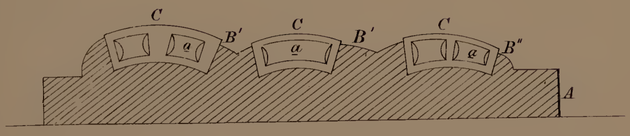


FIG. 5.

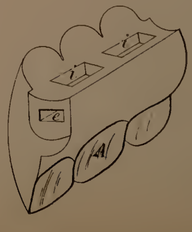
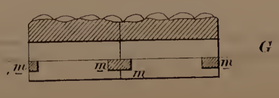


FIG. 9.

FIG. 10.



The filed drawing is not colored.

Drawn on Stone by Malby & Sons.

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Printers to the Queen's most Excellent Majesty. 1864